4. Needs Assessment

The needs assessment process was the focus of the second business case workshop, which was held in July 1996. The needs assessment process involved three activities: (1) the identification of the education and training opportunities available to DOE Federal and contractor personnel, (2) the analysis of current and future Departmental cross-cutting education and training needs, and (3) an investigation of industry best practices in advanced training technologies. The information gathered during the needs assessment process was used to identify the advanced training technologies that would be viable options in the DOE environment to support the delivery of cross-cutting learning activities.

The results of the needs assessment process were used to develop alternatives for meeting the Departmental cross-cutting education and training needs and to select advanced training technologies (i.e., interactive television, multimedia, and Internet) for delivery of the cross-cutting learning activities. Each alternative incorporates a mix of the advanced training technologies into a 5-year plan for developing cross-cutting learning activities and acquiring the necessary technologies to support their delivery. Descriptions of the alternatives are provided in chapter 5.

4.1 Cross-Cutting Opportunities

Existing Departmental course catalog data bases were inspected to obtain information on the quantity and types of courses currently offered and to determine a course's potential for cross-cutting applications. Two primary sources were used to obtain the course data.

- A Defense Program-sponsored catalog, which is a compilation of all existing DOE catalogs and contains over 12,000 course listings (with an estimated 2,000 courses coming from agencies or institutions outside of DOE).

- An archived version of the Training Resources and Data Exchange (TRADE) organization's Training Resources Catalog.

The course listings pulled from these catalogs were sorted into 13 topical areas that had been established for the DOE Universal Catalog. The DOE Universal Catalog is a direct descendent of the TRADE Training Resources Catalog and, although operational, it is currently limited in the number of courses it lists.

A Distance Learning Appropriateness Screening Tool (DLAST) was created and used to identify and categorize current education and training opportunities and to evaluate the potential for establishing cross-cutting learning activities. Courses from each of the 13 areas were selected, creating a representative sample of 164 courses. This number is approximately 10 percent of the total number of cross-cutting courses identified from the original catalog sorts. These 164 courses were rated on their cross-cutting applicability. Approximately 150 were identified as offering a high percentage of cross-cutting potential.

The courses were then evaluated using eight selection criteria to determine the most effective advanced training technology delivery method (i.e., interactive television, multimedia, or Internet) for each course. Selection criteria included items such as stability of the content, level of interactivity required, amount of media required, fidelity requirements of the media, and type of testing needed to assure student comprehension.

The DLAST analysis produced percentage estimates of the overall effectiveness of each delivery medium for each course. The results of the analysis indicated that all three advanced training technology delivery methods were viable options and offered different advantages depending on the learning objectives of each course. Appendix E contains a summary of the DLAST analysis process and the results obtained.

The data obtained from the DLAST analysis was used to guide the selection of the delivery method mix for each of the business case alternatives. For example, the multi-technology solution uses a mix of 30 percent delivery via interactive television, 55 percent via multimedia, and 15 percent via Internet. The delivery method mix is a primary discriminator between the alternatives.

The DLAST served as a useful tool for validating the cross-cutting potential of many current course offerings and for determining the overall viability of the three general types of advanced training technologies initially selected for the Department's approach to technology-supported learning. However, the tool was not intended to be a substitute for the evaluation process that must be performed in accordance with the Systematic Approach to Training when delivery methods are selected for actual cross-cutting courses to be implemented.

4.2 Best Practices and Benchmarking

An analysis of industry best practices in technology-supported learning activities was performed to support the identification of viable advanced training technologies. Organizations that would be appropriate for benchmarking the DOE were also identified. Information was obtained through on-line research, literature searches, and from existing DOE technology-supported learning materials and files.

The analysis provided high-level data on the education and training environments, best practices, and advanced training technologies used by educational institutions, Government agencies, and private sector companies to meet a variety of training needs. Best practices were identified in the following areas:

- Training needs assessment
- Course design/development
- Delivery technology used
- Savings measurement
- Training effectiveness measurement

The analysis of industry best practices was performed as the first step in the full-scale benchmarking process initially planned for the business case. Several Federal agencies and private

sector companies that have successfully implemented some advanced training technologies were identified: Federal Aviation Administration, Social Security Administration, Internal Revenue Service, Hewlett Packard, and Ford Motor Company. Initial contact was made with each organization and data about their technology-supported learning initiatives was obtained. The data was considered in the development of the business case alternatives and in the assumptions made for the analysis of benefits and costs.

While preliminary discussions were held with the Federal agencies that expressed interest in sharing information and exploring partnering agreements, the aggressive delivery schedule for the business case and insufficient project resources prevented in-depth data collection and on-site interviews with the organizations. A future benchmarking process is planned.

4.3 Advanced Training Technologies

The DOE report: *A Study of Advanced Training Technology: Emerging Answers to Tough Questions*, dated March 1, 1995, sponsored by the Office of Training and Human Resource Development, provides an extensive list of advanced training technologies and a summary of their strengths and limitations. The list served as the starting point for the identification of advanced training technologies that were considered for the DOE environment. During the third business case workshop held in August 1996, the technologies were evaluated by workshop participants and interactive television, multimedia, and the Internet/high-speed networks were selected as the most viable options.

The DOE report addresses implementation issues associated with advanced training technologies and offers a wide range of lessons learned by Government agencies, military, industry, and academia. The report provides data on approximately 50 organizations that were surveyed and ranked in their level of maturity using advanced training technologies for the delivery of learning activities. The data contained in the report provided significant input to the business case development process.

The industry best practices analysis and the information provided in the DOE report:*A Study of Advanced Training Technology: Emerging Answers to Tough Questions*, provided significant insight into the benefits and risks associated with technology-supported learning and enabled the identification of viable advanced training technology solutions for the Department. The solutions reflect the current status of existing Departmental technologies that support, or have the capability to support, the delivery of cross-cutting learning activities. The solutions also reflect current Departmental areas of expertise and known plans for technology acquisition and standardization.

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